A New Species of *Ardisia* (Myrsinaceae) from Madagascar

James S. Miller and John J. Pipoly III
Missouri Botanical Garden, P.O. Box 299, St. Louis, Missouri 63166-0299, U.S.A.

ABSTRACT. Recent exploration in the Marojejy Natural Reserve has resulted in the discovery of a new species, *Ardisia* (subg. *Akosmos*) *marojejyensis*. The species is described and illustrated, and its phylogenetic relationships are discussed. A key to distinguish the three known Madagascan species of *Ardisia* is provided, and subgenus *Madardisia* is relegated to synonymy under subgenus *Akosmos*.

The Réserve Naturelle Intégrale de Marojejy (number 12) comprises 60,150 hectares of wet, tropical forests that range from ca. 100 to 2,137 m in elevation (Jenkins, 1987). Henri Humbert botanized extensively in the region and made approximately 3,000 collections, many of which were species new to science (Humbert, 1955). Humbert's efforts were undoubtedly one of the factors drawing interest to the rich, largely endemic flora and leading to the declaration of the area as a reserve in 1952. Despite the efforts of Humbert and botanists who have since continued collecting in the reserve, the flora remains poorly known and continues to yield novelties. Recent estimates (Miller, ined.) indicate that the flora of the reserve contains about 2,000 species, perhaps 20% of the total flora of the country. Collecting efforts in the southern part of the reserve in February 1989 have yielded a previously undescribed species of *Ardisia* Swartz (Myrsinaceae), only the third reported for Madagascar.

Ardisia (subg. *Akosmos*) **marojejyensis** James S. Miller & Pipoly, sp. nov. TYPE: Madagascar. Antsiranana: Réserve Naturelle Intégrale de Marojejy, along the trail to the summit of Marojejy Est, NW of Mandena, wet, evergreen forest above the second camp, 700–850 m, 14°26′S, 49°16′E, 10 Feb. 1989 (fl), *James S. Miller & P. P. Lowry 3936* (holoytpe, MO 4064879; isotypes, K, P, TAN, US). Figure 1.

Arbor ad 15 m alta. Folia persistentia; lamina obovata, 18–28 cm longa, 8–12 cm lata, apice late obtuso ad rotundato, basi cuneata ad obtusa; petiolo 3–5 cm longo. Flores pedicellis 1–2 mm longis inserti, sepalis 1.7–2 mm longis, petalis 4–5 mm longis, antheris 2.5–3 mm longis, stylo ca. 3 mm longo. Fructus nobis non visus.

Tree 10–15 m tall; branchlets terete, 1–1.5 cm diam., densely furfuraceous-lepidote, the scales so densely packed as to form an apparent sheet, later breaking up and somewhat glabrescent. Leaves persistent; lamina carnose when fresh, drying coriaceous, obovate, 18–28 cm long, 8–12 cm wide, the apex widely obtuse to rounded, the base cuneate to obtuse, decurrent on the petiole, midrib depressed above, prominently raised and black punctate-lineate below, the secondary veins 35–40 pairs, 0.5–1 cm apart, inconspicuously pellucid punctate, glabrous above and below; petiole marginate, 3–5 cm long, densely furfuraceous-lepidote, glabrescent. Inflorescences clustered near the apices of branches, internodal, erect, paniculate, the rachis 15–30 cm long, the lateral branches 5–10 cm long, glabrous or nearly so. Flowers bisexual, borne on pedicels 1–2 mm long; buds ovoid to conical; sepals 5, quincuncial, greenish white, ovate, 1.7–2 mm long, glabrous, sparsely pellucid punctate, the margin scarious, hyaline, glabrous; petals 5, quincuncial, bright pink, basally connate, ovate to narrowly ovate, 4–5 mm long, 1.5–2 mm wide, apex acute, symmetric, prominently pellucid punctate, the margin irregular, entire, glabrous; stamens 5, the filaments 0.2–0.4 mm long, basally adnate to the petals, free from each other, the anthers bright yellow, lanceoloid, 2.5–3 mm long, apex long-apiculate, base cordate, dehiscing first by apical pores, then narrow, longitudinal slits, the connective conspicuously brown punctate dorsally; ovary ovoid, 0.5–1 mm long, the placenta depressed-globose, 0.4–0.6 mm long, 0.6–0.8 mm diam., apex apiculate, the ovules 4, biseriate, the style ca. 3 mm long, the stigma punctiform. Fruit unknown.

Local names: "Talandoha" (near Mandena); "Maimbola" (Ambatosoratra).

Ardisia marojejyensis is a spectacular, apparently mass-flowering tree, covered with pink flowers, making it easily visible from a distance. It is uncommon in the reserve at middle elevations, and few individuals were seen even though all in a given valley can easily be counted. Because this species appears to mass flower (all individuals flower synchronously in a short period of time), it is probable that it has been missed by previous collectors purely

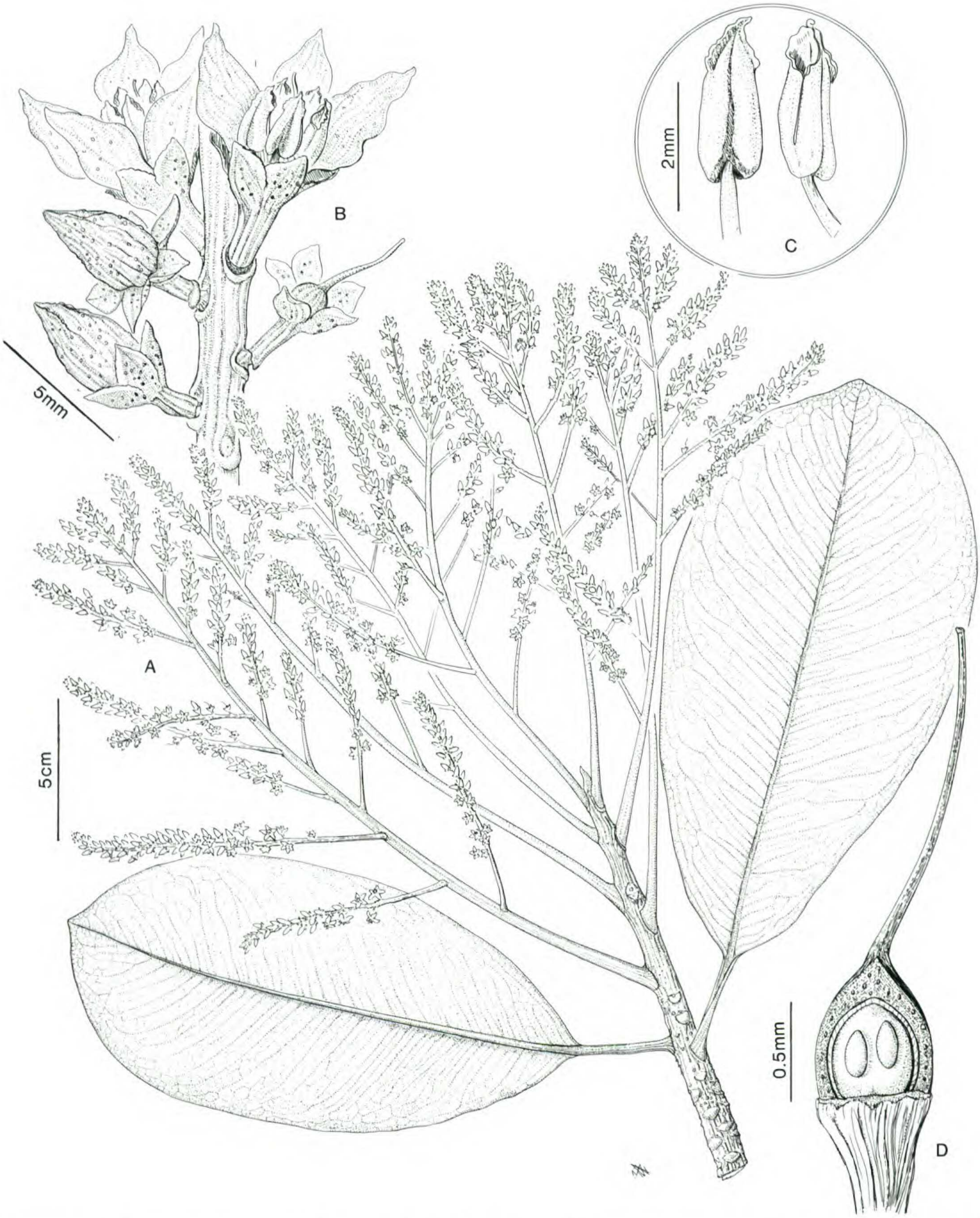

Figure 1. *Ardesia marojejyensis* James S. Miller & Pipoly. —A. Flowering branch, showing erect, pyramidal panicles with racemose branches. —B. Section of the inflorescence showing conical buds and open flowers. —C. Anthers showing apical pores and longitudinal slits. —D. Longisection of ovary showing placenta and biseriate ovules. Drawn from *Miller & Lowry 3936*.

by chance. However, when it was recently collected, the senior author noted it was a conspicuous element of the forest, and many individuals were readily visible from most vantage points.

Paratype. MADAGASCAR. ANTSIRANANA: Réserve Naturelle Intégrale de Marojejy, N slopes of Ambatosoratra, wet montane forest on steep slopes, 700–900 m, 14°32′S, 49°41′E, 24 Feb. 1989 (fl), *James S. Miller 4196* (MO, TAN).

KEY TO THE SPECIES OF *ARDISIA* IN MADAGASCAR

1a. Leaves 6–16 cm long; inflorescences umbelliform, long-pedunculate; anthers dehiscent by terminal pores; plants of western forests . . . . . *A. didymopora* (H. Perrier) Taton

1b. Leaves 18–40 cm long; inflorescences racemose or corymbose, in pyramidal panicles; anthers dehiscent by terminal pores, then narrow, longitudinal slits; plants of eastern forests.

2a. Leaves borne on petioles 3–5 cm long; panicles erect, pyramidal, the branches racemose; pedicels 1–2 mm long; petals 4–5 mm long, the apices acute . . . . . *A. marojejyensis* James S. Miller & Pipoly

2b. Leaves sessile or nearly so; panicles pendent, columnar, the branches corymbose; pedicels 10–20 mm long; petals 10–11 mm long, the apices abruptly acuminate-caudate . . . . . *A. procera* Capuron

Ardisia marojejyensis appears closely related to *A. procera* Capuron, another species from the wet forests of northeastern Madagascar. The paniculate inflorescences subequal to the leaves with racemose branches and long peduncles, the slightly curved style subequal to the petals, punctiform stigma, and anthers with first poricidal, then longitudinal dehiscence, clearly indicate that both species are members of subgenus *Akosmos* Mez. Subgenus *Akosmos* was thought to have its center of diversity in subtropical central Asia and eastern Asia (Mez, 1902), but recent studies by Stone (1989, 1990) indicate its center of diversity lies in the Malesian region. Capuron (1963) placed *Ardisia procera* in his new subgenus *Madardisia*, which we consider a taxonomic synonym of subgenus *Akosmos*. In comparing the descriptions of the subgenera, we have found that the principal difference was the fact that Capuron considered *Madardisia* to have strictly poricidal anther dehiscence, while Mez (1902) indicated that *Akosmos* had longitudinal anther dehiscence. Our examination of representative species of *Ardisia* subg. *Akosmos* from Madagascar, central tropical Asia, eastern subtropical Asia, and Malesia indicates that the anthers in many species open first by conspicuous or inconspicuous pores (terminal or subterminal), then by longitudinal slits. Failure to understand this morphogenetic process led Mez and Capuron to have incomplete concepts of the group. Therefore, the fact that two of the three *Ardisia* species thus far known from Madagascar belong to subgenus *Akosmos* is phytogeographically interesting. We hope that further collection in Madagascar and in the Malesian region will help the current dearth of knowledge on the population biology of these species.

Ardisia procera and *A. marojejyensis* are similar in general aspect and occur in similar forest types. However, *Ardisia marojejyensis* differs from *A. procera* in having leaves borne on marginate petioles 3–5 cm long, erect pyramidal panicles with racemose branches, and smaller flowers on short (1–2 mm) pedicels. Capuron (1963) described *A. procera* as deciduous, but this appears to be either the result of his describing a western dry forest race (or ecotype) formation, or an error. *Ardisia marojejyensis* certainly appears to have persistent foliage, and *A. procera*, also from a high-rainfall region, is most probably evergreen as well, at least in the rainforest zone. On the other hand, the other Madagascan species of the genus, *Ardisia didymopora* (H. Perrier) Taton, from dry regions in the west, is clearly deciduous.

Acknowledgments. We thank Roy E. Gereau for helpful comments on the manuscript and Latin description, and John Myers for the illustration. Fieldwork at Marojejy was funded by the National Geographic Society (3647–87), the World Wildlife Fund–U.S., and World Wide Fund for Nature (project #6502); their support is gratefully acknowledged.

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